## REMARKS

Claims 1-4, 6-10, 14-16, 23-28 and 34-40 were pending prior to this Response, with claims 5, 18-22, 29-33 and 41-48 having been withdrawn from further consideration. By the present communication, claims 1, 6, 7, 9, 10, 15, 16, 23 and 28 have been amended; no claims have been added; and no claims have been canceled. The amendments do not add new matter and are fully supported by the specification and original claims. Accordingly, upon entry of this communication, claims 1-4, 6-10, 14-16, 23-28 and 34-40 are currently under consideration.

### Rejections under 35 U.S.C. §112, Second Paragraph

Applicant respectfully traverses the rejection of claims 6, 7, 9, 10, 16, 23, 24 and 28 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 6 the Office Action alleges that the claim is indefinite because "it is unclear if the modification claimed is the act of making a chimeric fiber protein or if additional steps have been taken to reduce any interaction with HSP." Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 6 to clarify that the fiber is "further" modified to reduce any interaction with HSP. Accordingly, withdrawal of the rejection is respectfully requested.

In regards to claims 7 and 15 allegedly there was insufficient antecedent basis for the limitation of "the capsid". Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claims 7 and 15. Accordingly, withdrawal of the rejection is respectfully requested.

In regards to claims 9 and 10 the claim was allegedly unclear based on SEQ ID 31 being a nucleic acid sequence. Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claims 9 and 10

to refer to SEQ ID 32. SEQ IDs 31 and 32 are the nucleotide and amino acid sequences for Ad37. Accordingly, withdrawal of the rejection is respectfully requested.

In regards, to claim 16 the claim was allegedly unclear if the amino acids replaced are from amino acid 1 to 15-17 of the N-terminus or the 15th or 16th N-terminal acid. Additionally, the Action claimed that it was allegedly unclear where in the Ad5 fiber protein that these replacement amino acids were coming from. Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 16 to replace 15, 16 or 17 amino acids from the N-terminal of the Ad37 fiber with 15, 16 or 17 amino acids from the N-terminal of an Ad5 fiber. Support for this language is found at least in paragraph [0021] of the specification as published and generally throughout the specification and claims as originally filed. Accordingly, withdrawal of the rejection is respectfully requested.

In regards to claims 23 allegedly there was insufficient antecedent basis for the limitation of "the genome thereof." Claim 24 depends from claim 23 and was rejected based on it depends from a rejected claim. Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 23. Accordingly, withdrawal of the rejection for both claims 23 and 24 is respectfully requested.

In regards to claim 28 the Office Action alleges that the claim is indefinite because the metes and bounds of "a composition of claim 26 that is a vaccine" are unclear." Specifically the Office Action alleges that "it is not clear what this vaccine is directed towards since no additional limitations are claimed". Without acquiescing to the reasoning offered by the Office, and in order to expedite prosecution of the instant application, Applicant has amended claim 28. Support for this amendment and additional information regarding the vaccine is found at least in paragraph [0312] of the specification. Accordingly, withdrawal of the rejection is respectfully requested.

**Rejections under 35 U.S.C. §103**

Applicants respectfully traverse the rejection of claims 1-4, 8, 14, 25-27 and 34-40 under 35 U.S.C. §103(a) as allegedly being unpatentable over Shankara (WO99/47180) and Huang et al. (Journal of Virology 1999).

The recent U.S. Supreme Court decision in the *KSR International v. Teleflex Inc.* (82 USPQ2d 1385), modified the standard for establishing a *prima facie* case of obviousness. Under the *KSR* rule, three basic criteria are considered. First, some suggestion or motivation to modify a reference or to combine the teachings of multiple references still has to be shown. Second, the combination has to suggest a reasonable expectation of success. Third, the prior art reference or combination has to teach or suggest all of the recited claim limitations. Factors such as the general state of the art and common sense may be considered when determining the feasibility of modifying and/or combining references.

The Office Action alleges that Shankara teaches the generation of a recombinant Ad2 (a subgroup C adenovirus) with a heterologoux fiber protein or a chimeric fiber protein with heterologous portions from Ad17 (a subgroup D adenovirus). Shankara teaches that upon replacing all of the Ad2 fiber protein except for the first 16 N-terminal amino acids with the complementing regions of Ad17 fiber proteins, dendritic cell targeting increased greater that 10-fold. As a result, Shankara allegedly suggests that the fiber of subgroup D adenoviruses permits the targeting of dendritic cells. Shankara also allegedly teaches the development of recombinant Adenovirus 5 with a heterologous fiber protein from Adenovirus 2. However, the Office indicates that Shankara fails to discloses the use of Ad37 fiber protein segments; or the lack of HSP interaction by the recombinant adenovirus. The Action relies upon Huang for curing the defects in Shankara. Specifically, the Office Action alleges that Huang teaches the generation of recombinant Ad37 fiber proteins for determining how amino acid mutations can alter the cellular tropism of the fiber protein. According to the office Action, one of skill in the art would have been motivated to create a recombinant Ad5 with a fiber protein containing either all or a portion of the fiber protein from Ad37, thereby targeting dendritic cells and generating a recombinant

adenovirus with a fiber protein that has a reduced interaction with HSP because Shankara suggested that a Cadenovirus with a fiber protein from Ad17 (a D adenovirus) increases the targeting of dendritic cells. And that there would have been a reasonable expectation of success because the fiber protein of subgroup adenoviruses permits the targeting of dendritic cells..

Applicants submit that even if one of skill in the art would have combined Shankara and Huang, the resulting composition would not result in the claimed invention since the Adenovirus particles are not predictive as to what targets they will be most effective with. Page 7 lines 10-20 of Shankara demonstrate that "various adenovirus subgroups are identified that specifically or more efficiently infect certain mammalian target cells, such as dendritic cells or various cancer cells." Shankara makes no mention of the claimed adenoviral particle Ad37 or the mammalian target HSP. Shankara recognizes that there are clear differences as to how the adenoviral subgroups respond to different targets and additionally the different adenoviruses even with the same subgroup may have different effects on certain mammalian target cells. Additionally admits that neither Shankara or Huang comment on the reduced HSP interaction claimed in the present invention. The Action alleges that reduced HSP interaction would have been a natural outcome of combining the teachings of Shankara and Huang. However as stated neither reference mentions the HSP targer. The Action has equated the HSP interaction effected by modified Ad37 as identical to the use of Ad17 to target dendritic cells seen in the art. Although Huang allegedly teaches the generation of recombinant Ad37 fiber proteins Huang does not teach the use of chimeric Ad37 fiber proteins with specific structural components targeting specific cells especially in the context of targeting the mammalian target HSP.

As such, the teachings of both Shankara and Huang do not teach or suggest all of the recited claim limitations, do not supply a motivation to combine the cited references, and do not provide an expectation of success in achieving the present compositions. Accordingly, Applicants respectfully submit that a *prima facie* case of obviousness has not been established for the claimed invention, and request withdrawal of the rejection.

## CONCLUSION

In view of the amendments and above remarks, it is submitted that the claims are in condition for allowance, and a notice to that effect is respectfully requested. The Examiner is invited to contact Applicant's undersigned representative if there are any questions relating to this application.

No fee is deemed necessary with the filing of this paper. However if any fees are due, the Commissioner is hereby authorized to charge any fees, or make any credits, to Deposit Account No. 07-1896 referencing the above-identified attorney docket number.

Respectfully submitted,

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